

# Ion Alexandru Bobulescu, M.D.

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Ion.A.Bobulescu@TTUHSC.edu

## EDUCATION

- |      |   |
|------|---|
| 2000 | M.D., Carol Davila University of Medicine and Pharmacy and the Military Medical Institute, Bucharest, Romania |
| 1994 | Sf. Sava National College, Bucharest, Romania (Biology/Chemistry)   |

## POSTDOCTORAL CERTIFICATIONS

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|------|--|
| 2008 | Postdoctoral Certificate in Advanced Biomedical Research, University of Texas Southwestern Medical Center Graduate School of Biomedical Sciences, Dallas, TX |
| 2006 | Postdoctoral Certificate in Biomedical Research, University of Texas Southwestern Graduate School of Biomedical Sciences, Dallas, TX                         |

## POSTDOCTORAL TRAINING

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|-----------|--|
| 2005-2008 | Postdoctoral Research Fellow, Department of Internal Medicine and the Pak Center for Mineral Metabolism and Clinical Research, University of Texas Southwestern Medical Center, Dallas, TX |
| 2002-2005 | Postdoctoral Research Fellow, Department of Internal Medicine, Division of Nephrology, University of Texas Southwestern Medical Center, Dallas, TX   |
| 2001-2002 | Intern, Dr. Carol Davila Central Emergency Military Hospital, Bucharest, Romania   |
| 2000-2002 | Graduate Research/Teaching Assistant, Department of Physiology, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania   |

## ACADEMIC APPOINTMENTS

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|--------------|--|
| 2020-present | Associate Professor (Joint appointment), Department of Internal Medicine, School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX  |
| 2018-present | Associate Professor (Tenure track), Department of Cell Biology and Biochemistry, School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX   |
| 2012-2018    | Assistant Professor (Research track), Department of Internal Medicine, Division of Nephrology and the Pak Center for Mineral Metabolism and Clinical Research, University of Texas Southwestern Medical Center, Dallas, TX |
| 2009-2012    | Instructor, Department of Internal Medicine, Division of Nephrology, University of Texas Southwestern Medical Center, Dallas, TX   |
| 2008-2009    | Assistant Instructor, Department of Internal Medicine, Division of Nephrology, University of Texas Southwestern Medical Center, Dallas, TX   |

## RESEARCH SUPPORT – ACTIVE

### National Institutes of Health NIDDK R01-DK113377 (total \$1,417,500)

Title: Role of gut bacteria and renal lipids in obesity-related kidney disease  
Project period: 08/2017-05/2021  
Overall goals: Test the hypothesis that alterations in gut microbiota, in conjunction with changes in host renal lipid metabolism, contribute to chronic kidney disease progression in people with obesity and/or type 2 diabetes.  
Role: Principal Investigator

## RESEARCH SUPPORT – COMPLETED

### National Institutes of Health NIDDK 2R01-DK081423 (\$1,788,750)

Title: Pathogenesis of idiopathic uric acid nephrolithiasis: Multifaceted role of renal lipids  
Project period: 09/2014-06/2018  
Overall goals: Test the hypothesis that excess renal lipids suppress renal ammoniogenesis and increase risk for uric acid nephrolithiasis via two parallel mechanisms.  
Role: Co-Investigator

### Department of Internal Medicine Chair's Pilot Award, University of Texas Southwestern Medical Center (\$50,000)

Title: Gut microbiota and nephrolithiasis risk in type 2 diabetes  
Project period: 07/2015-06/2017  
Overall goals: Pilot project investigating whether differences in gut microbiota may underpin increased risk for uric acid nephrolithiasis and chronic kidney disease among people with type 2 diabetes.  
Role: Principal Investigator

### National Institutes of Health NIDDK K01-DK090282 (\$434,235)

Title: Protein phosphatase regulation of the principal renal sodium transporter NHE3  
Project period: 09/2011-04/2017  
Overall goals: Investigate the role of protein phosphatase 2A in the regulation of renal sodium transport and hypertension.  
Role: Principal Investigator

### National Institutes of Health NIDDK R01-DK081423 (\$1,742,158)

Title: Pathogenesis of idiopathic uric acid nephrolithiasis: Role of renal lipotoxicity  
Project period: 05/2009-04/2014  
Overall goals: Test the hypothesis that the urinary biochemical disturbances responsible for idiopathic uric acid nephrolithiasis are the consequence of renal lipotoxicity.  
Role: Co-Investigator

### Investigator Initiated Sponsored Research, Takeda Pharmaceuticals North America, Inc. (\$104,892)

Title: Hyperuricemia: Center stage of the metabolic syndrome  
Project period: 05/2011-09/2013  
Overall goals: Test the hypothesis that mild chronic hyperuricemia is an independent cause of insulin resistance and hypertension in two rodent models.  
Role: Principal Investigator

**American Society of Nephrology Carl W. Gottschalk Research Scholar Award (\$181,818)**

Title: Regulation of the renal sodium/proton exchanger NHE3 by dopamine: Role of Protein Phosphatase 2A  
Project period: 09/2008-08/2011  
Overall goals: Investigate the role of phosphatases in the intracellular signaling cascade responsible for dopamine-mediated inhibition of sodium transport via the sodium/proton exchanger NHE3 in the renal proximal tubule.  
Role: Principal Investigator

**Haberecht Wild-Hare Idea Research Award, Rolf and Ute Haberecht Foundation (\$10,000)**

Title: Hyperuricemia in metabolic syndrome: Role of renal lipotoxicity and oxidative stress  
Project period: 09/2009-08/2011  
Overall goals: Test the hypothesis that lipid-induced renal oxidative stress in obesity and type 2 diabetes results in increased uric acid reabsorption by the kidney.  
Role: Principal Investigator

**O'Brien Kidney Research Core Center Pilot and Feasibility Award, University of Texas Southwestern Medical Center (\$42,145)**

Title: Molecular mechanisms of renal phosphate transport in human health and disease  
Project period: 06/2010-08/2011  
Overall goals: Develop and validate a novel, simple urinary assay for renal phosphate transport proteins using animal and human studies.  
Role: Principal Investigator

**National Kidney Foundation Postdoctoral Fellowship (\$80,000)**

Title: Effect of lipotoxicity and renal insulin resistance on sodium/proton exchange  
Project period: 07/2003-06/2005  
Overall goals: Test the hypothesis that renal lipotoxicity leads to renal insulin resistance and impaired activity of the sodium/proton exchanger NHE3.  
Role: Principal Investigator (Postdoctoral Fellowship Grant; Advisor Orson W. Moe, MD)

**HONORS AND AWARDS**

03/2015 Department of Internal Medicine Chair's Pilot Award, University of Texas Southwestern Medical Center  
08/2009 Haberecht Wild-Hare Idea Award, Rolf and Ute Haberecht Foundation *via* the University of Texas Southwestern Medical Center  
09/2008 Carl W. Gottschalk Research Scholar Award, American Society of Nephrology  
07/2007 American Society of Nephrology Basic Science Travel Award for presentation at the Gordon Research Conference: Molecular and Cell Biology of Lipids, Waterville Valley, NH  
07/2003 Postdoctoral Fellowship Award, National Kidney Foundation  
11/2001 Twelfth European Students Conference for Medical Students and Young Doctors Poster Award, Humboldt University, Berlin, Germany  
04/2000 First Prize for Scientific Photography, 4<sup>th</sup> Annual "Fotogeografica" Romanian National Photography Competition, organized by the Bucharest Municipality Museum in partnership with National Geographic Romania

- Bobulescu IA.** The Old West analogy for acid-base buffering. *Adv Physiol Educ.* 2020 Jun 1;44(2):210-211. [PMID: 32243219]
- Bobulescu IA,** Park SK, Xu LHR, Blanco F, Poindexter J, Adams-Huet B, Davidson TL, Sakhaee K, Maalouf NM, Moe OW. Net Acid Excretion and Urinary Organic Anions in Idiopathic Uric Acid Nephrolithiasis. *Clin J Am Soc Nephrol.* 2019 Mar 7;14(3):411-420. [PMID: PMC6419274]
- Park SK, Rosenthal TR, Williams JS, Shelton JM, Takahashi M, Zhang S, **Bobulescu IA.** Metabolic and cardiovascular effects of chronic mild hyperuricemia in rodents. *J Investig Med.* 2018 Oct;66(7):1037-1044. [PMID: 30042113]
- Pathare G, Dhayat N, Mohebbi N, Wagner C, **Bobulescu IA,** Moe OW, Fuster DG. Acid and alkali loading cause acute changes in the B1 but not B2 subunit of V-ATPase in urinary exosomes. *Kidney Int.* 2018 Apr;93(4):871-880. [PMID: 29310826]
- Hu MC, **Bobulescu IA,** Quiñones H, Gisler SM, Moe OW. Dopamine reduces cell surface Na<sup>+</sup>/H<sup>+</sup> exchanger-3 (NHE3) protein by decreasing NHE3 exocytosis and cell membrane recycling. *Am J Physiol Renal Physiol.* 2017 Oct 1;313(4):F1018-F1025. [PMID: 28768665]
- Rutkowski JM, Pastor J, Sun K, Park SK, **Bobulescu IA,** Chen CT, Moe OW, Scherer PE. Adiponectin alters renal calcium and phosphate excretion through regulation of klotho expression. *Kidney Int.* 2017 Feb;91(2):324-337. [PMID: 27914707]
- Yokoo T, Clark HR, Pedrosa I, Yuan Q, Dimitrov I, Zhang Y, Lingvay I, Beg MS, **Bobulescu IA.** Quantification of renal steatosis in type II diabetes mellitus using dixon-based MRI. *J Magn Reson Imaging.* 2016 Nov;44(5):1312-1319. [PMID: 27007212]
- Zhang D\*, **Bobulescu IA\***, Maalouf NM, Adams-Huet B, Poindexter J, Park S, Wei F, Chen C, Moe OW, Sakhaee K. Relationship Between Serum Uric Acid and Bone Mineral Density in the General Population and in Rats with Experimental Hyperuricemia. *J Bone Miner Res.* 2015 Jun; 30(6):992-9. [PMID: 25491196] (\*equal contribution acknowledged in article)
- Bobulescu IA,** Lotan Y, Zhang J, Rosenthal TR, Rogers JT, Adams-Huet B, Sakhaee K, Moe OW. Triglycerides in the Human Kidney Cortex: Relationship with Body Size. *PLOS One* 2014 Aug; 29;9(8):e101285 [PMID: 25170827]
- Smith CR, Poindexter JR, Meegan JM, **Bobulescu IA,** Jensen ED, Venn-Watson S, Sakhaee K. Pathophysiological and physicochemical basis of ammonium urate stone formation in dolphins. *J Urol.* 2014 Jul;192(1):260-266. [PMID: 24518786]
- Bobulescu IA,** Maalouf NM, Capolongo G, Adams-Huet B, Rosenthal TR, Moe OW, Sakhaee K. Acute acid loading unmasks the renal ammonium excretion defect of idiopathic uric acid nephrolithiasis. *Am J Physiol Renal Physiol.* 2013 Nov;305(10):F1498-503. [PMID: 24026180]
- Bobulescu IA,** Moe OW. Renal transport of uric acid: Evolving concepts and uncertainties. *Adv Chronic Kidney Dis.* 2012 Nov; 19(6):358-371 [PMID: 23089270]
- Di Sole F, Hu MC, Zhang J, Babich V, **Bobulescu IA,** Shi M, McLeroy P, Rogers TE, Moe OW. The reduction of Na/H exchanger-3 protein and transcript expression in acute ischemia-reperfusion injury is mediated by extractable tissue factor(s). *Kidney Int.* 2011 Oct; 80(8):822-831 [PMID: 21814178]
- Twombly K, Gattineni J, **Bobulescu IA,** Dwarakanath V, Baum M. Effect of metabolic acidosis on neonatal Proximal tubule acidification. *Am J Physiol Regul Integr Comp Physiol.* 2010 Nov; 299(5):R1360-R1368 [PMID: 20720175]
- Bobulescu IA,** Quiñones H, Gisler SM, Di Sole F, Shi M, Hu MC, Zhang J, Fuster DG, Wright N, Mumby M, Moe OW. Acute regulation of renal Na<sup>+</sup>/H<sup>+</sup> exchanger NHE3 by dopamine: Role of Protein Phosphatase 2A. *Am J Physiol Renal Physiol.* 2010 Apr; 298:F1205-F1213 [PMID: 20181665]

- Bobulescu IA.** Renal lipid metabolism and lipotoxicity. *Curr Opin Nephrol Hypertens.* 2010 Jul;19(4):393-402. [PMID: 20489613]
- Bobulescu IA,** Dubree M, Zhang J, McLeroy P, Moe OW. Reduction of renal triglyceride accumulation: Effects on proximal tubule Na<sup>+</sup>/H<sup>+</sup> exchange and urinary acidification. *Am J Physiol Renal Physiol.* 2009 Nov; 297(5):F1419-26. [PMID: 19692486]
- Bobulescu IA,** Moe OW. Luminal Na<sup>+</sup>/H<sup>+</sup> exchange in the proximal tubule. *Pflugers Arch.* 2009 May; 458(1):5-21. [PMID: 18853182]
- Fuster DG, Zhang J, Shi M, **Bobulescu IA,** Andersson S, Moe OW. Characterization of the Sodium/Hydrogen Exchanger NHA2. *J Am Soc Nephrol.* 2008 Aug; 19(8):1547-1556. [PMID: 18508966]
- Bobulescu IA,** Dubree M, Zhang J, McLeroy P, Moe OW. Effect of renal lipid accumulation on proximal tubule Na<sup>+</sup>/H<sup>+</sup> exchange and ammonium secretion. *Am J Physiol Renal Physiol.* 2008 Jun; 294(6):F1315-F1322. [PMID: 18417539]
- Zhang J\*, **Bobulescu IA\***, Goyal S, Aronson PS, Baum MG, Moe OW. Characterization of Na<sup>+</sup>/H<sup>+</sup> exchanger NHE8 in cultured renal epithelial cells. *Am J Physiol Renal Physiol.* 2007 Sep; 293(3):F761-F766. [PMID: 17581925] (\*equal contribution acknowledged in article)
- Wang D, Hu J, **Bobulescu IA,** Quill TA, McLeroy P, Moe OW, Garbers DL. A sperm-specific Na<sup>+</sup>/H<sup>+</sup> exchanger (sNHE) is critical for expression and in vivo bicarbonate regulation of the soluble adenylyl cyclase (sAC). *Proc Natl Acad Sci U S A.* 2007 May 29; 104(22):9325-9330. [PMID: 17517652]
- Fuster DG, **Bobulescu IA,** Zhang J, Wade J, Moe OW. Characterization of the regulation of renal Na<sup>+</sup>/H<sup>+</sup> exchanger NHE3 by insulin. *Am J Physiol Renal Physiol.* 2007 Feb; 292(2):F577-F585. [PMID: 17018843]
- Bobulescu IA,** Moe OW. Na<sup>+</sup>/H<sup>+</sup> exchangers in renal regulation of acid-base balance *Semin Nephrol.* 2006 Sep; 26(5):334-344. [PMID: 17071327]
- Bobulescu IA,** Dwarakanath V, Zou L, Zhang J, Baum M, Moe OW. Glucocorticoids acutely increase cell surface Na<sup>+</sup>/H<sup>+</sup> exchanger-3 (NHE3) by activation of NHE3 exocytosis. *Am J Physiol Renal Physiol.* 2005 Oct; 289(4):F685-F691. [PMID: 15942046]
- Bobulescu IA,** Di Sole F, Moe OW. Na<sup>+</sup>/H<sup>+</sup> exchangers: physiology and link to hypertension and organ ischemia. *Curr Opin Nephrol Hypertens.* 2005 Sep; 14(5):485-494. [PMID: 16046909]

#### CITATION METRICS (Google Scholar, July 2020)

Total citations: >1,500  
h-index: 18

#### SELECTED CONFERENCE PRESENTATIONS

- Bobulescu IA.** A Multi-hit Model for Uric Acid Stone Formation. R.O.C.K. Society (Research on Calculus Kinetics) Winter Meeting, March 11-12, 2016, New York, NY.
- Bobulescu IA,** Rosenthal TR, Thompson H, Sakhaee K, Moe OW. Renal Lipid Accumulation in Human Obesity. Experimental Biology Meeting, April 20-24, 2013, Boston, MA. (*FASEB J.* 2013. 27:738.4.)
- Bobulescu IA,** Nguyen A, Moe OW. Phosphate Transporters in Human Urine: Window into the Molecular Physiology and Pathophysiology of Renal Phosphate Handling. American Society of Nephrology Renal Week, Nov. 16-21, 2010, Denver, CO. (*J Am Soc Nephrol.* 2010; 21.)
- Bobulescu IA,** Quiñones H, Gisler SM, Di Sole F, Shi M, Hu MC, Zhang J, Fuster D, Mumby M, Moe OW. Dopamine inhibits the Na<sup>+</sup>/H<sup>+</sup> Exchanger NHE3 via Protein Phosphatase 2A. Experimental Biology Meeting, April 24-28, 2010, Anaheim, CA. (*FASEB J.* 2010; 24:1002.26.)

**Bobulescu IA**, Quiñones H, Gisler SM, Di Sole F, Shi M, Hu MC, Zhang J, Fuster DG, Wright N, Mumby M, Moe OW. Protein phosphatase 2A: Key player between the natriuretic hormone dopamine and the principal sodium transporter NHE3. 48<sup>th</sup> Meeting of the Southern Salt, Water & Kidney Club, Dec. 3-7, 2008, Longboat Key, FL.

**Bobulescu IA**, Dubree M, Zhang J, Moe OW. Abnormalities of renal acidification associated with renal fat infiltration. American Society of Nephrology Renal Week, Nov. 2-5, 2007, San Francisco, CA. (*J Am Soc Nephrol.* 2007; 18:72A-73A.)

**Bobulescu IA**, Cameron MA, Maalouf NM, Sakhaee K, Moe OW. Effect of lipotoxicity on renal proximal tubule Na<sup>+</sup>/H<sup>+</sup> exchange and NH<sub>4</sub><sup>+</sup> secretion. Gordon Research Conference: Molecular and Cellular Biology of Lipids, Jul. 22-27, 2007, Waterville Valley, NH.

**Bobulescu IA**, Fuster D, Gisler S, Hu MC, Hilgemann D, Moe OW. Oligomerization of the plasma membrane Na<sup>+</sup>/H<sup>+</sup> exchanger type 3 (NHE3). American Society of Nephrology Renal Week, Nov. 8-13, 2005, Philadelphia, PA. (*J Am Soc Nephrol.* 2005; 16:122A.)

**Bobulescu IA**, Fuster D, Dubree M, McLeroy P, Moe OW. Renal insulin resistance caused by lipotoxicity and manifested as reduced Na<sup>+</sup>/H<sup>+</sup> exchanger 3 (NHE3) activity and ammonium excretion. National Kidney Foundation Spring Clinical Meetings, May 4-8, 2005, Washington, DC. (*Am J Kidney Dis.* 2005; 45(4):A20.)

**Bobulescu IA**, Moe OW. Renal insulin resistance: effects on Na<sup>+</sup>/H<sup>+</sup> exchange and ammoniogenesis. Invited lecture at the American Society of Nephrology Renal Week, Oct. 29-Nov. 1, 2004, St. Louis, MO.

**Bobulescu IA**, Fuster D, Dubree M, Moe OW. Reduction of renal Na<sup>+</sup>/H<sup>+</sup> exchange (NHE3) and ammonium excretion: manifestations of renal insulin resistance from lipotoxicity. American Society of Nephrology Renal Week, Oct. 29-Nov. 1, 2004, St. Louis, MO. (*J Am Soc Nephrol.* 2004; 15:68A.)

**Bobulescu IA**, Gore O, Gore C, Diculescu M. Patient distress following laparoscopic cholecystectomy. 12<sup>th</sup> European Students Conference – for Medical Students and Young Doctors, Humboldt University School of Medicine, Nov. 21-25, 2001, Berlin, Germany.

## TEACHING AND MENTORING

2020-present Unit Leader, Renal and Acid-Base Physiology, Structure and Function of Major Organ Systems (MSCI 5103) Course, Texas Tech University Health Sciences Center (TTUHSC) School of Medicine

2019-present Scheduled teaching, TTUHSC School of Medicine:

Course Number	Course Name	Topic(s) of Instruction	Delivery Mode
MSCI 5103	Structure and Function of Major Organ Systems	<ul style="list-style-type: none"> <li>Renal and Acid-Base Review</li> <li>Acid-Base Physiology</li> <li>Sodium Balance and Renal Sodium Handling</li> </ul>	Live lectures
MSCI 5106	Patients, Physicians & Populations/ Development of Clinical Skills (P3/DOCS)	<ul style="list-style-type: none"> <li>Covid-19</li> <li>Dialysis</li> <li>Heart Valves and Xenotransplantation</li> <li>Stem Cells</li> <li>Social Determinants of Health</li> <li>Clinical Anatomy (Anomalies of the Head and Neck)</li> </ul>	Small group learning
MSCI 6103	Systems Disorders 1	<ul style="list-style-type: none"> <li>Kidney Stones</li> </ul>	Online lecture
MSCI 6111	Step Enhancement	<ul style="list-style-type: none"> <li>Renal Structure, Function, Pharmacology and Pathology Review for USMLE Step 1</li> </ul>	Lecture and problem-based learning

2019-present Faculty member in the Biochemistry, Cellular and Molecular Biology Concentration, TTUHSC Graduate School of Biomedical Sciences

2019-present Scheduled teaching, TTUHSC Graduate School of Biomedical Sciences:

Course Number	Course Name	Topic(s) of Instruction	Delivery Mode
GCMB 6320	Advanced Cell Biology	<ul style="list-style-type: none"> <li>• How to Read a Scientific Paper</li> <li>• Cellular Trafficking</li> </ul>	Live lecture and interactive session
GBTC 6202	Biomedical Informatics	<ul style="list-style-type: none"> <li>• Metabolomics</li> </ul>	Lecture and software training

2019-present Research advisor for two post-doctoral fellows, TTUHSC

2016 Faculty, Origins of Renal Physiology National Course for Renal Fellows, Mount Desert Island Biological Laboratory, Bar Harbor, ME

2013-2016 Organizer and Moderator, Mineral Metabolism Journal Club, University of Texas Southwestern Medical Center

2012-2018 Research supervisor for >10 students, residents and renal fellows, University of Texas Southwestern Medical Center

2012-2016 Faculty, Basic Science Lecture Series for Renal Fellows, University of Texas Southwestern Medical Center

#### **EXTRAMURAL PROFESSIONAL SERVICE (past 5 years)**

2019-present Guest Editor for *Nutrients* (impact factor 4.17)

2015-present Ad-hoc reviewer for *American Journal of Physiology - Cell Physiology*; *American Journal of Physiology - Gastrointestinal and Liver Physiology*; *American Journal of Physiology - Renal Physiology*; *Biochemistry and Cell Biology*; *Current Opinion in Nephrology and Hypertension*; *Diabetes and Vascular Disease Research*; *Experimental Physiology*; *Journal of Clinical Endocrinology & Metabolism*; *Nephrology Dialysis Transplantation*

#### **PROFESSIONAL SOCIETIES**

2016-present R.O.C.K. Society (Research on Calculus Kinetics) elected member

2014-present American Society for Biochemistry and Molecular Biology

2007-2011 American Physiological Society

2006-2008 American Heart Association, Council on the Kidney in Cardiovascular Disease

2006-2007 American Society of Human Genetics

2002-2009 American Society of Nephrology

#### **LANGUAGES**

English native or bilingual proficiency

Romanian native or bilingual proficiency

French professional working proficiency

Spanish elementary proficiency